### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property **Organization** International Bureau





(43) International Publication Date 3 June 2004 (03.06.2004)

**PCT** 

## (10) International Publication Number WO 2004/047166 A3

(51) International Patent Classification7: H01L 23/00

G03F 7/039,

(21) International Application Number:

PCT/US2003/036542

(22) International Filing Date:

14 November 2003 (14.11.2003)

(25) Filing Language:

(26) Publication Language:

English

(30) Priority Data: 60/426,738

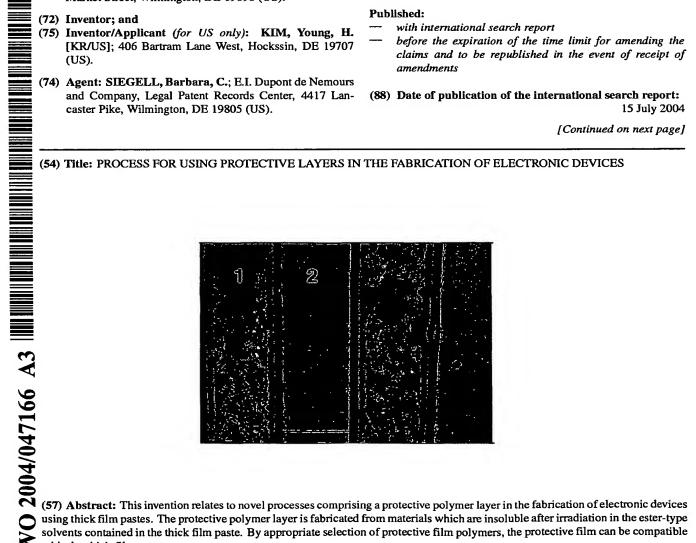
15 November 2002 (15.11.2002) US

- (71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US).
- (72) Inventor; and

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

- with international search report



using thick film pastes. The protective polymer layer is fabricated from materials which are insoluble after irradiation in the ester-type solvents contained in the thick film paste. By appropriate selection of protective film polymers, the protective film can be compatible with the thick film paste.



## WO 2004/047166 A3



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G03F7/039 H01L23/00

According to International Patent Classification (IPC) or to both national classification and IPC

#### **B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols) IPC 7 G03F H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

| C. DOCUMENTS CONSIDERED TO BE RELEVANT |   |                       |  |  |  |  |  |
|--|---|-----------------------|--|--|--|--|--|
| Category *                             | Citation of document, with indication, where appropriate, of the relevant passages                                      | Relevant to claim No. |  |  |  |  |  |
| X                                      | US 6 060 207 A (N. SHIDA ET AL.) 9 May 2000 (2000-05-09) column 34, line 37 - line 42 column 204; example II.204        | 1-5                   |  |  |  |  |  |
| X                                      | EP 0 936 504 A (DAICEL CHEMICAL<br>INDUSTRIES, LTD.)<br>18 August 1999 (1999-08-18)<br>page 14; example I.1<br>claim 10 | 1-5                   |  |  |  |  |  |
| х                                      | US 4 985 332 A (A.G. ANDERSON ET AL.) 15 January 1991 (1991-01-15) column 1, line 25 - line 30 column 10; example 1     | 1-5                   |  |  |  |  |  |
|  |   |                       |  |  |  |  |  |

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| Date of the actual completion of the international search  15 April 2004  | Date of mailing of the international search report  21/05/2004   |
| Name and mailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2  NL - 2280 HV Rijswijk  Tel. (+31-70) 340-2040, Tx. 31 651 epo ni,  Fax: (+31-70) 340-3016  | Authorized officer  Dupart, JM.  |

# INTERNATIONAL SEARCH REPORT

ational Application No
PCT/US 03/36542

|             |   | PCT/US 03/36542       |  |  |
|-------------|---|-----------------------|--|--|
| C.(Continua | ation) DOCUMENTS CONSIDERED TO BE RELEVANT  |                       |  |  |
| Category °  | Citation of document, with indication, where appropriate, of the relevant passages                            | Relevant to claim No. |  |  |
| X           | US 6 410 748 B1 (N. SHIDA ET AL.) 25 June 2002 (2002-06-25) column 43, line 6 - line 10 column 73; example 14 | 1-5                   |  |  |
| A           | US 2002/001720 A1 (R. S. CLOUGH) 3 January 2002 (2002-01-03) page 2, paragraph 18 claims                      | 1-5                   |  |  |
| A           | US 4 373 019 A (Y. WATANABE ET AL.) 8 February 1983 (1983-02-08) figure 6 column 7, line 8 - line 14          | 1-5                   |  |  |
|             |   |                       |  |  |



ional Application No

| Patent document cited in search report |    | Publication date |  | Patent family member(s)   | Publication date   |
|--|----|------------------|--|---|--|
| US 6060207                             | Α  | 09-05-2000       | DE<br>JP<br>JP<br>KR                   | 19525221 A<br>3417733 B<br>8082925 A<br>195595 B  | 16-06-2003<br>26-03-1996   |
| EP 0936504                             | Α  | 18-08-1999       | JP<br>EP<br>EP                         | 11231541 A<br>1376233 A<br>0936504 A  | 2 02-01-2004   |
| US 4985332                             | Α  | 15-01-1991       | WO<br>US                               | 9115807 A<br>5219711 A  |  |
| US 6410748                             | B1 | 25-06-2002       | JP<br>US                               | 11171835 <i>A</i><br>6291129 E  |  |
| US 2002001720                          | A1 | 03-01-2002       | US<br>US<br>AU<br>CN<br>EP<br>JP<br>WO | 6294270 E<br>2002114969 A<br>6254199 A<br>1337975 T<br>1141073 A<br>2003504425 T<br>0039189 A | A1 22-08-2002<br>A 31-07-2000<br>T 27-02-2002<br>A1 10-10-2001<br>T 04-02-2003 |
| US 4373019                             | A  | 08-02-1983       | JP<br>JP<br>DE<br>EP<br>WO             | 55034440 /<br>59015394 E<br>2965661 E<br>0016231 /<br>8000520 /                               | 3 09-04-1984<br>01 21-07-1983<br>A1 01-10-1980                                 |